

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In re application of:**

**Larry C. Olsen et al.**

**Application No. 10/726,744**

**Filed:** December 2, 2003

**Confirmation No. 6833**

**For: THERMOELECTRIC DEVICES AND  
APPLICATIONS FOR THE SAME**

**Examiner:** Jeffrey Thomas Barton

**Art Unit:** 1795

**Attorney Reference No. 23-65037-01**

**CERTIFICATE OF MAILING**

I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: MAIL STOP RCE, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 on the date shown below.

**Attorney or Agent  
for Applicant(s)** \_\_\_\_\_

**Date Mailed** \_\_\_\_\_

**MAIL STOP RCE  
COMMISSIONER FOR PATENTS  
P.O. BOX 1450  
ALEXANDRIA, VA 22313-1450**

**DECLARATION UNDER 37 C.F.R. § 1.131**

We, Larry C. Olsen, Peter M. Martin, John W. Johnston and John G. DeSteeese, declare as follows:

1. We are joint inventors of the above-identified application.
2. We have reviewed the Office action dated February 29, 2008. It is our understanding that certain claims are rejected in the Office action dated February 29, 2008, as allegedly being anticipated under 35 U.S.C. § 102(e) and unpatentable under 35 U.S.C. § 103(a) by U.S. Pat. Pub. No. 2004/0231714 A1 ("Stark"), which has an alleged priority date of May 19, 2003.
3. Exhibit A hereto is a true copy of an Invention Report document signed prior to May 19, 2003, disclosing and illustrating reduction to practice inventions recited in certain of the pending claims. Exhibits B-1 and B-2 are computer screen shots showing photographs taken by Tim Peters (and photographs alone) of equipment we had built and used to test and evaluate, prior to May 19, 2003, the embodiment of the power source of the invention that is shown in the photographs and as recited in certain of the pending claims. Exhibit C is a computer screen shot

showing a photograph taken prior to May 19, 2003 of an embodiment of the power source of the invention and as recited in certain of the pending claims, the power source embodiment being a flexible substrate with bismuth-telluride thermocouples and metal bridges between thermoelements, the substrate formed in a coil configuration, which embodiment we had built and tested prior to May 19, 2003. The redacted portions of the Exhibits do not qualify or dispute any of the unredacted portions.

4. We conceived of and reduced to practice in the United States thermoelements comprising  $Bi_xTe_y$ ,  $Sb_xTe_y$ ,  $Bi_xSe_y$ , and/or some combination thereof where  $x$  is about 2 and  $y$  is about 3 as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

5. We conceived of and reduced to practice in the United States co-sputter depositing n-type and p-type thermoelements comprising  $Bi_xTe_y$ ,  $Sb_xTe_y$ ,  $Bi_xSe_y$ , and/or some combination thereof where  $x$  is about 2 and  $y$  is about 3 as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

6. We conceived of and reduced to practice in the United States the use of a flexible substrate with the semi-conductor thin-film thermoelements as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

7. We conceived of and reduced to practice in the United States the use of a flexible substrate with the semi-conductor thin-film thermoelements wherein the flexible substrate is formed in a coil configuration as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

8. We conceived of and reduced to practice in the United States a power source comprising a flexible substrate with a co-sputter deposited thin film p-type and n-type thermoelements with electrically conductive members electrically connecting the thermoelements, wherein the thermoelements comprise  $Bi_xTe_y$ ,  $Sb_xTe_y$ , or  $Bi_xSe_y$ , wherein  $x$  is about 2 and  $y$  is about 3, as recited in certain claims, prior to May 19, 2003. Exhibits B, B-1 and

B-2 illustrate the reduction to practice of this power source. Exhibits A-C illustrate conception and reduction to practice of the flexible substrate with the thermoelements as set forth above and as recited in certain claims.

9. We conceived of, in the United States, a power source formed using the thin films described above, wherein the power source had a volume of less than about 10 cm<sup>3</sup> and an output of from 1  $\mu$ W to 1 W as recited in certain of the claims prior to May 19, 2003. E.g., see Exhibits B, B-1, B-2 and C. We worked diligently toward reducing to practice (by building and testing an embodiment of the invention) the inventions as recited in certain of the pending claims, including the power source formed using the thin films described above, wherein the power source had a volume of less than about 10 cm<sup>3</sup> and would be capable of having an output of from about 1  $\mu$ W to about 1 W if further thermocouples of the same type were included in the device, from a date prior to May 19, 2003 up through our reduction to practice.

10. We conceived of and reduced to practice in the United States a power source having the thin films (as described above) formed on a flexible substrate formed into a coil configuration as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

11. All statements made herein and of our own knowledge are true and all statements made on information are believed to be true; and further, these statements were made with the knowledge that willful false statements and like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statements made may jeopardize the validity of the application or any patent issuing thereon.

Date May 19, 2008

Larry C Olsen  
Larry C. Olsen

Date May 19, 2008

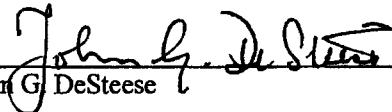
Peter M. Martin  
Peter M. Martin

Date \_\_\_\_\_

John W. Johnston

Date May 19, 2008

John G. DeSteese



LMC:cmwl:gjv 12/10/08 13664-B  
PATENTAttorney Reference Number 23-65037-01  
Application Number 10/726,744

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

## In re application of:

Larry C. Olsen et al.

**Application No. 10/726,744****Filed:** December 2, 2003**Confirmation No. 6833****For:** THERMOELECTRIC DEVICES AND  
APPLICATIONS FOR THE SAME**Examiner:** Jeffrey Thomas Barton**Art Unit:** 1795**Attorney Reference No.** 23-65037-01

## CERTIFICATE OF MAILING

I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: MAIL STOP RCE, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 on the date shown below.

Attorney or Agent  
for Applicant(s) \_\_\_\_\_

Date Mailed \_\_\_\_\_

**MAIL STOP RCE**  
**COMMISSIONER FOR PATENTS**  
**P.O. BOX 1450**  
**ALEXANDRIA, VA 22313-1450**

## DECLARATION UNDER 37 C.F.R. § 1.131

We, Larry C. Olsen, Peter M. Martin, John W. Johnston and John G. DeStesec, declare as follows:

1. We are joint inventors of the above-identified application.
2. We have reviewed the Office action dated February 29, 2008. It is our understanding that certain claims are rejected in the Office action dated February 29, 2008, as allegedly being anticipated under 35 U.S.C. § 102(e) and unpatentable under 35 U.S.C. § 103(a) by U.S. Pat. Pub. No. 2004/0231714 A1 ("Stark"), which has an alleged priority date of May 19, 2003.
3. Exhibit A hereto is a true copy of an Invention Report document signed prior to May 19, 2003, disclosing and illustrating reduction to practice inventions recited in certain of the pending claims. Exhibits B-1 and B-2 are computer screen shots showing photographs taken by Tim Peters (and photographs alone) of equipment we had built and used to test and evaluate, prior to May 19, 2003, the embodiment of the power source of the invention that is shown in the photographs and as recited in certain of the pending claims. Exhibit C is a computer screen shot

LMC:cmw1:ejv 12/10/08 13664.D  
PATENTAttorney Reference Number 23-65037-01  
Application Number 10/726,744

showing a photograph taken prior to May 19, 2003 of an embodiment of the power source of the invention and as recited in certain of the pending claims, the power source embodiment being a flexible substrate with bismuth-telluride thermocouples and metal bridges between thermoelements, the substrate formed in a coil configuration, which embodiment we had built and tested prior to May 19, 2003. The redacted portions of the Exhibits do not qualify or dispute any of the unredacted portions.

4. We conceived of and reduced to practice in the United States thermoelements comprising  $Bi_xTe_y$ ,  $Sb_xTe_y$ ,  $Bi_xSe_y$ , and/or some combination thereof where  $x$  is about 2 and  $y$  is about 3 as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

5. We conceived of and reduced to practice in the United States co-sputter depositing n-type and p-type thermoelements comprising  $Bi_xTe_y$ ,  $Sb_xTe_y$ ,  $Bi_xSe_y$ , and/or some combination thereof where  $x$  is about 2 and  $y$  is about 3 as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

6. We conceived of and reduced to practice in the United States the use of a flexible substrate with the semi-conductor thin-film thermoelements as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

7. We conceived of and reduced to practice in the United States the use of a flexible substrate with the semi-conductor thin-film thermoelements wherein the flexible substrate is formed in a coil configuration as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

8. We conceived of and reduced to practice in the United States a power source comprising a flexible substrate with a co-sputter deposited thin film p-type and n-type thermoelements with electrically conductive members electrically connecting the thermoelements, wherein the thermoelements comprise  $Bi_xTe_y$ ,  $Sb_xTe_y$ , or  $Bi_xSe_y$ , wherein  $x$  is about 2 and  $y$  is about 3, as recited in certain claims, prior to May 19, 2003. Exhibits B, B-1 and

LMC:cmw1:gcv 12/10/08 13664.B  
PATENTAttorney Reference Number 23-65037-01  
Application Number 10/726,744

B-2 illustrate the reduction to practice of this power source. Exhibits A-C illustrate conception and reduction to practice of the flexible substrate with the thermoelements as set forth above and as recited in certain claims.

9. We conceived of, in the United States, a power source formed using the thin films described above, wherein the power source had a volume of less than about 10 cm<sup>3</sup> and an output of from 1  $\mu$ W to 1 W as recited in certain of the claims prior to May 19, 2003. E.g., see Exhibits B, B-1, B-2 and C. We worked diligently toward reducing to practice (by building and testing an embodiment of the invention) the inventions as recited in certain of the pending claims, including the power source formed using the thin films described above, wherein the power source had a volume of less than about 10 cm<sup>3</sup> and would be capable of having an output of from about 1  $\mu$ W to about 1 W if further thermocouples of the same type were included in the device, from a date prior to May 19, 2003 up through our reduction to practice.

10. We conceived of and reduced to practice in the United States a power source having the thin films (as described above) formed on a flexible substrate formed into a coil configuration as recited in certain of the claims prior to May 19, 2003. See Exhibits A-C.

11. All statements made herein and of our own knowledge are true and all statements made on information are believed to be true; and further, these statements were made with the knowledge that willful false statements and like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statements made may jeopardize the validity of the application or any patent issuing thereon.

Date \_\_\_\_\_

Larry C. Olsen

Date \_\_\_\_\_

Peter M. Martin

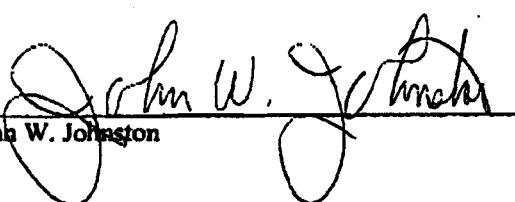
FROM : DAN GAUB IND. MARKET AMERICA PHONE NO. : 509 453 3497

Nov. 31 2008 07:16AM P5

LMC:cmwl:ejv 12/10/08 13664-B  
PATENT

Attorney Reference Number 23-65037-01  
Application Number 10/726,744

Date 12-10-2008

  
John W. Johnston

Date \_\_\_\_\_

  
John G. DeSteese